

VASCULAR PLANT TYPES IN THE ARIZONA STATE UNIVERSITY HERBARIUM

Stefanie M. Ickert-Bond and Donald J. Pinkava

*Department of Plant Biology
Arizona State University, Box 871601
Tempe, AZ 85287-1601, U.S.A.*

ABSTRACT

Founded in 1896 by Fredrick M. Irish, the vascular plant herbarium at Arizona State University (ASU) acts as a repository for plants particularly from the desert Southwest and Mexico. It now contains over 230,000 specimens, of which 735 have been designated as types including paratypes. Here we present a list that documents 384 major vascular plant type specimens and includes verified holotypes, lectotypes, syntypes and neotypes and their duplicates. Regionally the majority of the specimens are from the United States (186) and Mexico (178), while 13 from South America and 7 from the Old World. Taxonomically, the majority of type specimens belong to the Asteraceae (84), followed by Polygonaceae (56), Cactaceae (34), Scrophulariaceae (27), Fabaceae (16), the Agavaceae (13), and Acanthaceae (10). Historically prominent are 60 isotype specimens collected by C.G. Pringle, a prominent early plant collector in Mexico from 1885 to 1909. Numerous type collections were also made by James R. Reveal, Noel H. Holmgren, Howard S. Gentry and George B. Hinton. For each basionym typified by an ASU specimen, which is accompanied by a copy of the original publication, we here list collector(s) and collection number, locality information (restricted to country and state or equivalent demographic unit), and date of collection.

RESUMEN

Fundado en 1896 por Frederick M. Irish, el herbario de plantas vasculares de la Universidad del Estado de Arizona (ASU) actúa como un repositorio de plantas, principalmente del desierto del Suroeste y México. Actualmente el herbario cuenta con 230.000 ejemplares, de los cuales 735 corresponden a ejemplares tipo incluyendo también paratipos. Se presenta una lista que documenta 384 de los más importantes ejemplares tipo de plantas vasculares, incluyendo holotipos, lectotipos, sintipos, y neotipos, y sus duplicados. Regionalmente, la mayoría de los ejemplares son de los Estados Unidos (186) y de México (178); mientras que 13 son de América del Sur y 7 de Viejo Mundo. Taxonómicamente, la mayoría de los ejemplares tipo pertenecen a las familias Asteraceae (84), seguida de Polygonaceae (56), Cactaceae (34), Scrophulariaceae (27), Fabaceae (16), Agavaceae (13), y Acanthaceae (10). Históricamente, los más importantes son 60 isotipos colectados por C.G. Pringle, prominente colector en México entre 1885 y 1909. Se cuenta además con ejemplares tipo de los colectores James R. Reveal, Noel H. Holmgren, Howard S. Gentry y George B. Hinton. Cada basónimo tipificado por un ejemplar en ASU, incluye una copia de la publicación original. Se listan además, el colector(es), y número de colecta, información de la localidad (restringida al país y estado o unidad demográfica equivalente) y a la fecha de la colecta.

INTRODUCTION

Since the herbarium was founded by Fredrick M. Irish in 1896, the vascular plant herbarium has grown to over 230,000 specimens, centering on floristics of the

desert Southwest and Mexico, but many worldwide collections are represented. Frederick Mortimer Irish received his Bachelor of Science degree at the University of Iowa in 1895 and briefly taught high school in his hometown of Dubuque, Iowa, before accepting the position at Tempe Normal School in 1896 (Thomas 1960). "Cap" Irish served not only as the biology science teacher, but also as football coach, captain of the Military Company, and leader of student activities such as the Cactus Walking Club and the Girl's Hiking Club (Hopkins & Thomas 1960; Trauth-Nare & Pinkava 2000).

"He knew the flowers and could call them by name. As a botanist he was an authority" (Thomas 1960, p. 549). Irish was instrumental in establishing the herbarium. When Irish came to Tempe he brought with him his personal collections. Over the years more than 700 specimens bearing his name have been processed; some duplicates have been eventually deposited at the Desert Botanical Garden (DES). His early collections in the Salt River Valley are a valuable historical record of the diversity of plants in the Phoenix area of the time. Irish was appointed Registrar at the newly named Arizona State Teachers College in 1925 and served in this position till his death in 1941 (Thomas 1960).

James A. McCleary followed Irish as curator and botany professor. His interests were in bryophytes and desert plants and he and his students added approximately 3,000 specimens from 1947-1959 with only minimal financial assistance (McCleary, pers. comm.). By 1960, according to the new curator, Norman H. Russell, professor and departmental chair, more than 15,000 specimens were shelved in the herbarium. It was housed on the third floor of the now Life Science Center A Wing, Arizona State University (Rubinoff 1973). Russell's research interests included study of *Viola* and numerical taxonomy.

Donald J. Pinkava became director of the herbarium and Assistant Professor of Botany in 1964, after receiving a Ph.D. in Botany from Ohio State University, studying the genus *Berlandiera* DC. (Asteraceae). His research has focused on the Asteraceae, floristics of Cuatro Ciénegas, Coahuila, Mexico (resulting in 52 type collections and 5 original descriptions) and most recently on cacti, particularly the Opuntioideae of the Southwest. The ASU Herbarium houses one of the nation's largest collections of Cactaceae, including the best documented vouchered collection for chromosome counts. The Arizona State University Herbarium received official recognition when assigned its acronym, ASU, in 1966 (Anonymous 1966). It was then recognized as one of only 105 resource herbaria in the United States (Anonymous 1974). In 1971 the herbarium was moved to its present site, the third floor of the new C Wing of the Life Science Center (LS C392). During Pinkava's tenure as director, several members of the faculty, curators and especially his graduate students were responsible for the growth of the herbarium.

Throughout the 1960s and 1970s Pinkava received much assistance from

the very knowledgeable curator, Ms. Elinor Lehto; her contributions were immeasurable. Upon her retirement in 1980, Bruce Parfitt served as acting curator, until the position was upgraded to half-time curation and half-time research position, which was filled by Thomas Daniel, who received his Ph.D. from the University of Michigan. As an expert on Neotropical Acanthaceae, his studies resulted in several types. Upon the appointment of Tom Daniel as curator of the herbarium at the California Academy of Sciences, Leslie R. Landrum, who also received his Ph.D. from the University of Michigan, accepted in 1986 the position as curator and research scientist in the Department of Botany. He is an expert on New World Myrtaceae. An herbarium grant from the National Science Foundation created a permanent half-time position for a collections' manager, which rotates from student to student and provides an important learning experience. As curator, Landrum's objectives have been to enlarge the holdings of Southwestern plants, and acquire material from Mexico, South America and the Caribbean, where he and many of his students carry out current studies. Increased interest has also been placed upon the Phoenix Flora project (URL: <http://www.asu.edu/ces/CAPLTER.htm>), part of the Central Arizona-Phoenix Long-Term Ecological Research Project (CAP LTER) awarded to the Center for Environmental Studies, funded by the National Science Foundation. Present staff of the ASU herbarium includes Pinkava, retired Director (Biosystematics of Opuntioideae, Southwest floristics), and Landrum, Curator (Systematics of South American Myrtinae, Southwest floristics).

The ASU herbarium serves as repository of specimens worldwide and particularly from the southwestern United States. Emphasis is on producing a Manual of the Vascular Plants of Arizona, portions of which are being published as they become available in the Journal of the Arizona-Nevada Academy of Science. From 1992 to 2001, treatments of 68 families or portions thereof, were prepared by experts, including ASU staff and students (Mason et al. 1992). These publications make the treatments available for researchers, pending the publication of the completed Flora.

TYPE COLLECTIONS

The ASU vascular plant herbarium houses 735 type specimens including 26 holotypes, 338 isotypes, 3 isolectotypes, 13 isosyntypes, 4 isoneotypes, 233 paratypes, and 118 isoparatypes. The following list documents 384 vascular plant type specimens in the Arizona State University Herbarium (ASU) and includes verified holotypes, lectotypes, syntypes and neotypes and their duplicates. Regionally, the majority of the specimens are from the United States (186) and Mexico (178), while 13 are from South America and 7 from the Old World. Taxonomically the majority of type specimens belong to the Asteraceae (84), followed by Polygonaceae (56), Cactaceae (34 of which 15 are holotypes),

Scrophulariaceae (27), Fabaceae (16), Agavaceae (13), and Acanthaceae (10). Historically prominent are 60 isotypes collected by C.G. Pringle, a prominent early plant collector in Mexico from 1885 to 1909 (Davis 1936). Numerous type collections were also made by James R. Reveal, Noel H. Holmgren, Howard S. Gentry, and George B. Hinton (Ickert-Bond and Pinkava 2000). The list of type specimens is arranged phylogenetically by division and then alphabetically by family, genus, species, and infraspecific categories. For each basionym typified by an ASU specimen accompanied by a copy of the original publication, we here list collector(s) and collection number, locality information (restricted to country and state or equivalent demographic unit), and date of collection.

In the 1960s the irreplaceable type specimens were filed among the general collection and were thus subject to much unnecessary handling. The specimens are now housed in two separate herbarium cabinets. The use of these specimens is limited to only trained taxonomists, who appreciate the value of these specimens in accordance with the recommendations set forth by the International Code of Botanical Nomenclature (Greuter et al. 2000), "Recommendation 7A . It is strongly recommended that the material on which the name of a taxon is based, especially the holotype, be deposited in a public herbarium or other public collection with a policy of giving bona fide botanists open access to deposited material, and that it be scrupulously conserved ". The types are specially curated in acid-free genus folders (e.g., palm folders) and additionally each specimen is protected by a species folder, all from Herbarium Supply Company, California. Copies of original descriptions are accompanying the type specimens. They are fastened on a herbarium sheet with archival clear-hold press-on mounting corners from Light Impressions, New York. Specimens were checked against the original publication and the type status was verified. Cross-referencing dummy sheets are placed in the main herbarium.

Some specimens that are cited in the protologue are missing from the ASU type collection; they are out on loan or were never received. This type list is the first account of the history of the ASU herbarium and the first list of its type specimens. We plan to update this list in the future with a supplement of all new types since this publication. We feel that the printed version of the type list allows for convenient checking of type specimens. A searchable list of all type specimens including paratypes, isotypes and clonotypes as well as some images of types is planned for the future, and will be made available at a later point through the web page of the ASU herbarium (URL: <http://lsvl.la.asu.edu/herbarium/>). The construction of such a web page will take some time and this paper version will serve in the interim.

VASCULAR PLANT TYPES IN THE
ARIZONA STATE UNIVERSITY HERBARIUM

POLYPODIOPHYTA

ASPLENIACEAE

Asplenium montanum C.L. Willdenow forma **shawangunkense** T. Reeves, Amer. Fern J. 64:105. 1974. USA. New York: 18 Oct 1973, T. Reeves R500 (HOLOTYPE). ASU 67981.

DRYOPTERIDACEAE

Cystopteris utahensis M.D. Windham & C.H. Haufler, Amer. Fern J. 81:13. 1991. USA. Utah: 2 Jul 1990, M.D. Windham 90-282 with Windham (ISOTYPE). ASU not found.

Woodsia cochisensis M.D. Windham, Contr. Univ. Michigan Herb. 19:54. 1993. USA. Arizona: 31 Aug 1985, M.D. Windham 781 with G. Yatskievych (ISOTYPE). ASU not found.

Woodsia neomexicana M.D. Windham, Contr. Univ. Michigan Herb. 19:52. 1993. USA. New Mexico: 23 Aug 1990, M.D. Windham 90-365 with Rabe (ISOTYPE). ASU not found.

POLYPODIACEAE

Goniophlebium pringlei W.R. Maxon, Proc. U.S. Natl. Mus. 27:953. 1904. Mexico. Veracruz: 30 Nov 1903, C.G. Pringle 11855 (ISOTYPE). ASU 60335.

PTERIDACEAE

Astrolepis cochisensis (L.N. Goodding) D.M. Benham subsp. **arizonica** D.M. Benham, Amer. Fern J. 82:60. 1992. USA. Arizona: 5 Sep 1989, D.M. Benham 1312 (ISOTYPE). ASU 158448.

Cheilanthes yavapensis T. Reeves ex M.D. Windham, Contr. Univ. Michigan Herb. 19:33. 1993. USA. Arizona: 18 Nov 1980, M.D. Windham 202 (ISOTYPE). ASU not found.

Pellaea lyngholmii M.D. Windham, Contr. Univ. Michigan Herb. 19:40. 1993. USA. Arizona: 23 Sep 1990, M.D. Windham 90-420 with Lyngholm (ISOTYPE). ASU not found.

Pellaea ternifolia (A.J. Cavanilles) J.H.F. Link subsp. **arizonica** M.D. Windham, Contr. Univ. Michigan Herb. 19:47. 1993. USA. Arizona: 18 Mar 1981, M.D. Windham 246-C (ISOTYPE). ASU 115789.

MAGNOLIOPHYTINA-DICOTS

ACANTHACEAE

Dyschoriste novogaliciana T.F. Daniel, Polibotanica 2:1. 1996. Mexico. Nayarit: 16 Mar 1982, T.F. Daniel 2051 (ISOTYPE). ASU 208318.

Justicia masiaca T.F. Daniel, Brittonia 47:408. 1995. Mexico. Sonora: 14 Jan 1983, T.F. Daniel 2456 (ISOTYPE). ASU 220596.

Mirandea andradenia T.F. Daniel, Southw. Naturalist 31:170. 1986. Mexico. Tamaulipas: 12 Aug 1984, T.F. Daniel 3693 with M. Baker (ISOTYPE). ASU 142778.

Mirandea huastecensis T.F. Daniel, Syst. Bot. 3:428. 1979. Mexico. Nuevo Leon: 10 Jul 1978, T.F. Daniel 252 (ISOTYPE). ASU 110135.

Mirandea sylvatica S. Acosta, Phytologia 57:249. 1985. Mexico. Tabasco: 26 Apr 1983, F. Ventura 20168 (ISOTYPE). ASU 147810.

Tetramerium butterwickianum T.F. Daniel, Syst. Bot. Monogr. 12:89. 1986. Mexico. Michoacan: 27 Nov 1983, T.F. Daniel 3267 with M. Butterwick (ISOTYPE). ASU 141588.

Tetramerium emilyanum T.F. Daniel, Syst. Bot. Monogr. 12:74. 1986. Mexico. Michoacan: 26 Nov 1983, T.F. Daniel 3258 with M. Butterwick (ISOTYPE). ASU 141733.

Tetramerium mcvaughii T.F. Daniel, Syst. Bot. Monogr. 12:92. 1986. Mexico. Michoacan: 26 Nov 1983, T.F. Daniel 3247 with M. Butterwick (ISOTYPE). ASU 141590.

Tetramerium rzedowskii T.F. Daniel, Syst. Bot. Monogr. 12:104. 1986. Mexico. Michoacan: 24 Mar 1982, T.F. Daniel 2145 (ISOTYPE). ASU 141586.

Tetramerium sagasteguianum T.F. Daniel, Syst. Bot. Monogr. 12:110. 1986. Peru. Cajamarca: 30 Aug 1985, T.F. Daniel 4319 with M. Butterwick (ISOTYPE). ASU 142681.

APIACEAE

Angelica callii M.L. Mathias & L.C. Constance, Madroño 24:78. 1977. USA. California: 18 Oct 1965, T. & V. Call 2459 (ISOTYPE). ASU 108729.

Lomatium junceum R. Barneby & N.H. Holmgren, Brittonia 31:96. 1979. USA. Utah:

27 May 1978, N.H. Holmgren et al. 8778 (ISOTYPE). ASU 113743.

Prionosciadum megacarpum J.M. Coulter & J.N. Rose, Contr. U.S. Natl. Herb. 3:308. 1895. Mexico. Oaxaca: 10 Oct 1894, C.G. Pringle 4688 (ISOTYPE). ASU 50595.

Sanicula moranii P. Vargas, L.C. Constance & B.G. Baldwin, Brittonia 50:122. 1998. Mexico. Baja California: 19 May 1973, R. Moran 20929 (ISOTYPE). ASU 170073.

AQUIFOLIACEAE

Ilex pringlei P.C. Standley, Contr. U.S. Natl. Herb. 23:675. 1923. Mexico. Puebla: 25 Apr 1904, C.G. Pringle 10003 (ISOTYPE). ASU 50602.

ASCLEPIADACEAE

Asclepias welshii N.H. Holmgren & P.K. Holmgren, Brittonia 31:110. 1979. USA. Utah: 20 Jun 1978, N.H. Holmgren 9009 with P. Holmgren (ISOTYPE). ASU 113750.

Marsdenia tressensisii S.A. Caceres & G.N. Morillo, Bonplandia (Corrientes) 7:34. 1993. Argentina.: 21 Oct 1988, S.A. Caceres 426 (ISOTYPE). ASU 191309.

ASTERACEAE

Achaetogeron versicolor J.M. Greenman, Proc. Amer. Acad. Arts 41:255. 1905. Mexico. Hidalgo: 7 Aug 1904, C.G. Pringle 8849 (ISOTYPE). ASU 50584.

Acourtia fragrans J. Rzedowski, Bol. Soc. Bot. Mexico 45:102. 1983. Mexico. Puebla: 6 Jan 1981, J. Rzedowski 37174 (ISOTYPE). ASU 184636.

Acourtia hintoniorum B.L. Turner, Phytologia 75:404. 1993. Mexico. Nuevo Leon: 13 Nov 1993, G.B. Hinton 23934 et al. (ISOTYPE). ASU 202296.

Acourtia huajuapania B.L. Turner var. **actinomorpha** J. Rzedowski, Bol. Soc. Bot. Mex. 45:104. 1983. Mexico. Guerrero: 23 Dec 1980, J. Rzedowski 37160 (ISOTYPE). ASU 184565.

Alomia stenolepis S.F. Blake, J. Wash. Acad. Sci. 27:375. 1937. Mexico. Sonora: 7 Mar 1935, H.S. Gentry 1434 (ISOTYPE). ASU 89075.

Barroetea subuligera A. Gray var. **latisquama** J.M. Greenman, Proc. Amer. Acad. Arts 40:35. 1904. Mexico. Jalisco: 27 Oct 1903, C.G. Pringle 8773 (ISOTYPE). ASU 17584.

Bidens rosea Schz. Bip. var. **aequisquamosa**

M.L. Fernald, Proc. Amer. Acad. Arts 43:68. 1907. Mexico. Michoacan: 1 Nov 1905, C.G. Pringle 10109 (ISOTYPE). ASU 50605.

Carminatia alvarezii J. Rzedowski & G. Calderon, Anales Esc. Nac. Ci. Biol. 31:9. 1987. Mexico. Oaxaca: 25 Oct 1980, J. Rzedowski 37075 (ISOTYPE). ASU 147806.

Carminatia anomala B.L. Turner, Pl. Syst. Evol. 160:173. 1988. Mexico. Puebla: 6 Oct 1984, Sundberg 3032 with M. Levin (ISOTYPE). ASU 141518.

Chrysactinia lehtoae D. Keil, Madroño 23:374. 1976. Mexico. Sinaloa: 25 Nov 1975, E. Lehto L19551 with T.H. Nash and J.J. Landye (HOLOTYPE). ASU 80003.

Chrysanthellum keilii B.L. Turner, Phytologia 64:437. 1988. Mexico. Michoacan: 29 Aug 1981, D. Keil 15222 with M.L. Lane (ISOTYPES). ASU 123621, 176521.

Chrysanthemus nauseosus (P.S. Pallas) Britt. subsp. **iridis** L.C. Anderson, Great Basin Naturalist 41:311. 1981. USA. Utah: 29 Sep 1979, S.L. Welsh 19258 (ISOTYPE). ASU 108397.

Cirsium clokeyi S.F. Blake, Proc. Biol. Soc. Wash. 51:8. 1938. USA. Nevada: 6 Aug 1937, I.W. Clokey 7456 (ISOTYPE). ASU 66713.

Cymophora pringlei B.L. Robinson, Proc. Amer. Acad. Arts 43:39. 1907. Mexico. Guerrero: 22 Sep 1905, C.G. Pringle 10068 (ISOTYPE). ASU 18329.

Erigeron acomanus R. Spellenberg & P. Knight, Madroño 36:115. 1989. USA. New Mexico: 14 Jul 1983, P. Knight 2689 (ISOTYPE). ASU 176290.

Erigeron arisolius G.L. Nesom, Phytologia 69:243. 1990. USA. Arizona: 28 Aug 1981, G.L. Nesom 4521 (ISOTYPE). ASU 174639.

Erigeron basaseachensis G.L. Nesom, Phytologia 66:426. 1989. Mexico. Chihuahua: 18 Aug 1984, G.L. Nesom 5089 with P. Lewis (ISOTYPE). ASU 160286.

Erigeron bistiensis G.L. Nesom & B. Hevron, Madroño 42:12. 1995. USA. New Mexico: 3 Jun 1993, B. Hevron 1975 with J. Merz (ISOTYPE). ASU 191569.

Erigeron byei S. Sundberg & G.L. Nesom, Phytologia 69:278. 1990. Mexico. Chihuahua: 19 May 1985, R. Scott 471 with T. Ayers, M. Lavin & A. Whittemore (ISOTYPE). ASU 202297.

Erigeron chiangii G.L.Nesom var. **lamprocaulis** G.L.Nesom, Phytologia 73:119. 1992. Mexico. Coahuila: 3 Jun 1992, G. Nesom 7408 with M. Mayfield (ISOTYPE). ASU 190098.

Erigeron coroniglandifer G.L. Nesom, Phytologia 66:432. 1989. Mexico. Chihuahua: 28 Aug 1983, G.L. Nesom 4964 (ISOTYPE). ASU 160287.

Erigeron cuatrocienegensis G.L. Nesom, Madroño 28:143. 1981. Mexico. Coahuila: 12 Jun 1968, D.J. Pinkava P5511 with E. Lehto, D.J. Keil (HOLOTYPE). ASU 80536.

Erigeron eruptens G.L. Nesom, Phytologia 66:438. 1989. Mexico. Chihuahua: 27 Apr 1985, R. Spellenberg 8070 et al. (ISOTYPE). ASU 143251.

Erigeron rybius G.L. Nesom, Syst. Bot. 7:457. 1982. USA. New Mexico: 30 Aug 1981, G.L. Nesom 4535 (ISOTYPE). ASU 124943.

Erigeron sceptrifer G.L. Nesom, Phytologia 69:248. 1990. Mexico. Chihuahua: 23 Aug 1981, G.L. Nesom 4477 (ISOTYPE). ASU 174638.

Erigeron scopulinus G.L. Nesom & V.D. Roth, J. Arizona-Nevada Acad. Sci. 16:39. 1981. USA. Arizona: 9 Jun 1976, V.D. Roth s.n. (ISOTYPE). ASU 140787.

Eupatorium saltillense B.L. Robinson, Proc. Amer. Acad. Arts 43:31. 1907. Mexico. Coahuila: 5 Oct 1905, C.G. Pringle 10080 (ISOTYPE). ASU 18777.

Flaveria mcdougallii M.E.Theroux, D.J. Pinkava & D. Keil, Madroño 24:13. 1977. USA. Arizona: 27 Jan 1976, M.E.Theroux 1675 (ISOTYPE). ASU 84121.

Gaillardia powellii B.L.Turner, Southw. Naturalist 17:183. 1972. Mexico. Coahuila: 11 Apr 1970, B.L.Turner 6023 (ISOTYPE). ASU 130037.

Grindelia fraxino-pratensis J.L. Reveal & J. Beatley, Bull. Torrey Bot. Club 98:334. 1971. USA. Nevada: 21 Aug 1968, J.L. Reveal 1887 with N.H. Holmgren (ISOTYPE). ASU 50079.

Grindelia hintoniorum G.L.Nesom, Phytologia: 68:328. 1990. Mexico. Nuevo Leon: 15 May 1984, G.B. Hinton 18666 et al. (ISOTYPE). ASU 147845.

Gutierrezia ionensis C.L. Lunell, Amer. Mid. Naturalist 2:194. 1912. Neotyped by M.A. Lane, Syst. Bot. 10:25. 1985. USA. Oregon: 27 Aug 1983, M.A. Lane 3054 (ISONEOTYPE). ASU 130892.

Halimium exaltatum J.N. Rose & P.C. Standley, Contr. U.S. Natl. Herb. 23:833. 1923. Mexico. Michoacan: 27 Oct 1907, C.G. Pringle 10409 (ISOTYPE). ASU 16235.

Haplopappus enormidens R.Moran, Phytologia 34:371. 1976. Mexico. Baja California: 19 Jul 1975, R. Moran 22602 (ISOTYPE). ASU 85778.

Haplopappus juarezensis R. Moran, Trans. San Diego Soc. Naturalist Hist. 15:154. 1969. Mexico. Baja California: 17 Sep 1966, R. Moran 13556 (ISOTYPE). ASU 200010.

Haplopappus rosaricus R. Moran, Trans. San Diego Soc. Naturalist Hist. 15:159. 1969. Mexico. Baja California: 2 Jul 1967, R. Moran 14020 (ISOTYPE). ASU 200013.

Haplopappus thiniicola J. Rzedowski & E. Ezcurra, Ci. Interamer. 26:16. 1986. Mexico. Sonora: 17 Dec 1984, E. Ezcurra 84001 (ISOTYPE). ASU 150461.

Heterotheca fulcrata (E.L. Greene) Shinners var. **arizonica** J.S. Semple, Brittonia 39:380. 1987. U.S.A. Arizona: 13 Sep 1985, J.S. Semple & S. Heard 7923 (ISOTYPE). ASU on loan.

Heterotheca marginata J.S. Semple, U. Waterloo Biol. Ser. 38: 83. 1996. U.S.A. Arizona: 16 Oct 1993, J.S. Semple 10384 (ISOTYPE). ASU on loan.

Heterotheca mucronata V.L. Harms in B.L. Turner var. **harmsiana** J.S. Semple, U. Waterloo Biol. Ser. 38: 60. 1996. Mexico. Zacatecas: 18 Jun 1976, D.J. Pinkava P13486 et al. (HOLOTYPE). ASU on loan.

Heterotheca zionensis J.C. Semple, Brittonia 39:384. 1987. USA. Utah: 15 Sep 1985, J.C. Semple 7859 & S. Heard (ISOTYPE). ASU 160244.

Hydropectis stevensii R. McVaugh, Contr. Univ. Michigan Herb. 9:416. 1972. Mexico. Jalisco: 11 Aug 1958, R. McVaugh 17078 (ISOTYPE). ASU 127635.

Hymenoxys turneri K. Parker, Phytologia 20:192. 1970. USA. Texas: 21 Apr 1965, B.L. Turner 5154 (ISOTYPE). ASU 174640.

Isocoma menziesii (W.J. Hooker & G.A.W. Arnott) G.L.Nesom var. **diabolica** G.L.Nesom, Phytologia 70:96. 1991. USA. California: 5 Oct 1985, D. Keil 19042 (ISOTYPE). ASU 146650.

Isocoma tomentosa G.L. Nesom, Phytologia 70:109. 1991. Mexico. Chihuahua: 14 Oct 1986, G.L. Nesom 5478 with W.L. Vorbik (ISOTYPE). ASU 184811.

Laphamia cochisensis W.E. Niles, Mem. New York Bot. Gard. 21:47. 1970. USA. Arizona: 10 May 1964, W.E. Niles 377 (ISOTYPE). ASU 75480.

Machaeranthera ammophila J.L. Reveal, Bull. Torrey Bot. Club 97:172. 1970. USA. Nevada: 21 Aug 1968, J.L. Reveal 1882 with N.H. Holmgren (ISOTYPE). ASU 96211.

Machaeranthera asteroides (J. Torrey) E.L. Greene var. **glandulosa** B.L. Turner, Phytologia 60:77. 1986. USA. Arizona: 19 Sep 1975, E. Lehto L18904 et al. (ISOTYPE). ASU 78593.

Machaeranthera canescens (F.T. Pursh) A. Gray var. **nebrascana** B.L. Turner, Phytologia 60:77. 1986. USA. Nevada: 27 Aug 1968, S. Stephens 28307 (ISOTYPE). ASU 83768.

Microspermum debile G. Bentham var. **arsenei** J. Rzedowski, Bol. Soc. Bot. Mexico 31:81. 1970. Mexico. Michoacan: 18 Nov 1967, J. Rzedowski 25195 (ISOTYPE). ASU 44931.

Parthenium lozanianum H.H. Bartlett, Proc. Amer. Acad. Arts 44:636. 1909. Mexico. Nuevo Leon: 1 May 1906, C.G. Pringle 10247 (ISOTYPE). ASU 50587.

Pectis exilis D. Keil, Phytologia 67:349. 1989. Mexico. Jalisco: 6 Oct 1903, C.G. Pringle 8760 (ISOTYPE). ASU 26006.

Pectis holochaeta (S.F. Blake) D. Keil var. **cana** D. Keil, Phytologia 67:354. 1989. Mexico. Michoacan: 7 Sep 1981, D. Keil 15389 with M. Luckow (ISOTYPE). ASU 161217.

Pectis papposa W.H. Harvey & A. Gray var. **grandis** D. Keil, Brittonia: 26:32. 1974. USA. Texas: 15 Aug 1971, D. Keil K7768 with L.A. McGill (ISOTYPE). ASU 51797.

Pectis purpurea T.S. Brandegee var. **sonorae** D. Keil, Brittonia 26:35. 1974. Mexico. Sonora: 07 Sep 1977, D. Keil K8644 & J.M. Canne (ISOTYPE). ASU 51802.

Perezia hooveri R. McVaugh, Contr. Univ. Michigan Herb. 9:466. 1972. Mexico. Jalisco: 3 Apr 1951, R. McVaugh 11750 (ISOTYPE). ASU 127485.

Perezia fruticosa La Lave & J.J.M. de Lexarza, Nov. Veg. Descr. 1:24. 1824. Neotyped in the genus **Acourtia** by B.L. Turner, Phytologia 74:390. 1993. Mexico. Michoacan: 26 Nov 1907, C.G. Pringle 10410 (ISOTYPE). ASU 25734.

Perezia lozanii J.M. Greenman, Proc. Amer. Acad. Arts 41:268. 1905. Mexico. Hidalgo: 19 Sep 1904, C.G. Pringle 8871 (ISOTYPE). ASU 50588.

Perityle turneri M.A. Powell, Madroño 21:456. 1972. Mexico. Chihuahua: 2 Apr 1970, M.A. Powell 1858 (ISOTYPE). ASU 108726.

Perymenium uxor R. McVaugh, Contr. Univ. Michigan Herb. 9:439. 1972. Mexico. Nayarit: 20 Dec 1970, R. McVaugh 25583 (ISOTYPE). ASU 127508.

Porophyllum calcicola B.L. Robinson, Proc. Amer. Acad. Arts 39:116. 1903. Mexico. Morelos: 8 Nov 1902, C.G. Pringle 8720 (ISOTYPE). ASU 26126.

Porophyllum pygmaeum D. Keil & J.B. Morefield, Syst. Bot. 14:583. 1989. USA. Nevada: 4 Jun 1987, J.B. Morefield 4511E with F. Ehrendorfer (ISOTYPE). ASU 160750.

Psilostrophe mexicana R.C. Brown, Brittonia 26:115. 1974. Mexico. Chihuahua: 23 Jul 1973, R.C. Brown B788 with D.J. Pinkava & L.A. McGill (HOLOTYPE). ASU 50454.

Sabazia anomola J.M. Greenman, Proc. Amer. Acad. Arts 41:262. 1905. 1970. Mexico. Hidalgo: 7 Aug 1904, C.G. Pringle 8853 (ISOTYPE). ASU 26332.

Senecio cyclophyllus J.M. Greenman, Publ. Field Columbian Mus. Bot. Ser. 2:276. 1907. Mexico. Nuevo Leon: 31 Mar 1906, C.G. Pringle 10230 (ISOTYPE). ASU 23015.

Senecio filaris R. McVaugh, Contr. Univ. Michigan Herb. 9:470. 1972. Mexico. Colima: 7-8 Dec 1959, R. McVaugh 1550 with W.N. Koelz (ISOTYPE). ASU 127492.

Senecio ganderi T.M. Barkley & R.M. Beauchamp, Brittonia 26:106. 1974. USA. California: 23 May 1973, R. Moran & M. Douglas 21038 (ISOTYPE). ASU 54676.

Senecio platypus J.M. Greenman, Publ. Columbian Field Mus. Bot. Ser. 2:278. 1907. Mexico. Nuevo Leon: 21 Dec 1906, C.G. Pringle 10352 (ISOTYPE). ASU 23014.

Senecio rzedowskii J. García-Pérez, Phytologia 57:275. 1985. Mexico. Mexico: 18 Jul 1982, J. Rzedowski 37876 (ISOTYPE). ASU 184568.

Solidago ericamerioides G.L. Nesom, Phytologia 67:143. 1989. Mexico. Nuevo Leon: 26 Aug 1984, G.B. Hinton et al. 18763 (ISOTYPE). ASU 148389.

Solidago julia G.L. Nesom, Phytologia 67:445. 1989. USA. Texas: 23 Sep 1989, G.L. Nesom 7212 with J. Nesom (ISOTYPE). ASU 174657.

Sphaeromeria ruthiae A.H. Holmgren, L.M. Shultz & T.K. Lowry, Brittonia 28:257. 1976. USA. Utah: 20 Sep 1974, A.H. Holmgren 16003 with L. Shultz & T.K. Lowry (ISOTYPE). ASU 91050.

Stevia purpusii B.L. Robinson, Contr. Gray Herb. 90:18. 1930. Mexico. Morelos: 19 Nov 1902, C.G. Pringle 11294 (ISOTYPE). ASU 26690.

Stylocline intertexta J.D. Morefield, Madroño 39:121. 1992. USA. California: 7 May 1991, J.B. Morefield 5445 (ISOTYPE). ASU 188414.

Tagetes stenophylla B.L. Robinson, Proc. Amer. Acad. Arts 43:44. 1907. Mexico. Michoacan: 25 Jan 1907, C.G. Pringle 10361 (ISOTYPE). ASU 26646.

Tanacetum bajacalifornicum R. Moran, Trans. San Diego Soc. Naturalist Hist.: 15:292. 1969. Mexico. Baja California: 14 Sep 1968, R. Moran 15613 (ISOTYPE). ASU 200012.

Townsendia jonesii (J.H. Beaman) J.L. Reveal var. **tumulosa** J.L. Reveal, Great Basin Naturalist 30:37. 1970. USA. Nevada: 17 Jun 1968, J.L. Reveal 1326 (ISOTYPE). ASU 29721.

Townsendia smithii L.M. Shultz & A.H. Holmgren, Brittonia 32:144. 1980. USA. Arizona: 4 Jun 1977, A.H. Holmgren 16380 with L.M. Shultz, J. Shultz & F. Smith (ISOTYPE). ASU 111217.

Tridax yecorana B.L. Turner, Phytologia 79:286. 1995. Mexico. Sonora: 7 Sep 1995, T.R. Van Devender 95-836 with A.L. Reina G., D.A. Yetman & M.E. Fishbein (ISOTYPE). ASU 206994.

Vernonia joyaliae B.L. Turner, Phytologia 73:16. 1992. Mexico. Sonora: 17 May 1990, E. Joyal 1465 with A. Alvarez, C. Smith. & J. Rascon (HOLOTYPE). ASU 184020.

Xanthocephalum durangense M.L. Lane, Syst. Bot. 8:305. 1983. Mexico. Durango: 24 Aug 1979, M. Lane 2738 with D.W. Longstreh (ISOTYPE). ASU 111180.

Xanthocephalum gymnospermoides (A. Gray) G. Bentham & W.J. Hooker var. **intermedium** M.L. Lane, Syst. Bot. 8:305. 1983. Mexico. Chihuahua: 23 Aug 1978, M. Lane 2479 with D.W. Longstreh (ISOTYPE). ASU 111179.

Xanthocephalum petrodoria S.L. Welsh & S.

Goodrich, Brittonia 33:301. 1981. USA. Utah: 24 Sep 1980, S. Goodrich 15240 (ISOTYPE). ASU 120136.

BETULACEAE

Alnus arguta (Schlechtendal) E. Spach var. **cuprea** H.H. Bartlett, Proc. Amer. Acad. Arts 44:610. 1909. Lectotypified by J.J. Furlow, Rhodora 81:107. 1979. Mexico. Oaxaca: 27 May 1906, C.G. Pringle 10251 (ISOLECTOTYPE). ASU 6251.

Alnus arguta (Schlechtendal) E. Spach var. **subsericea** H.H. Bartlett, Proc. Amer. Acad. Arts 44:610. 1909. Mexico. Oaxaca: 27 May 1906, C.G. Pringle 10252 (ISOTYPE). ASU 6250.

Alnus firmifolia M.L. Fernald, Proc. Amer. Acad. Arts 43:61. 1907. Mexico. Mexico: 30 Aug 1905, C.G. Pringle 10040 (ISOTYPE). ASU 50603.

BORAGINACEAE

Heliotropium calcicola M.L. Fernald, Proc. Amer. Acad. Arts 43:62. 1907. Mexico. Guerrero: 28 Sep 1905, C.G. Pringle 10262 (ISOTYPE). ASU 6576.

Tiquilia turneri A. Richardson, Sida 6:237. 1976. Mexico. Coahuila: 29 Jun 1971, A.T. Richardson 1595 (ISOTYPE). ASU 66700.

Tournefortia potosina P.C. Standley, Contr. U.S. Natl. Herb. 23:1230. 1924. Mexico. San Luis Potosi: 2 Jul 1890, C.G. Pringle 3518 (ISOTYPE). ASU 50580.

BRASSICACEAE

Draba oreibata J.F. Macbride & E.B. Payson var. **serpentina** A. Tiehm & P.K. Holmgren, Brittonia 43:20. 1991. USA. Nevada: 29 Jun 1966, N.H. Holmgren 2761 with J.L. Reveal (ISOTYPE). ASU 177190.

Lesquerella vicina J.A. Anderson, J.L. Reveal & R. Rollins, Novon 7:9. 1997. USA. Colorado: 9 May 1988, J.L. Anderson 88-15b (ISOTYPE). ASU 206733.

CACTACEAE

Cochiseia robbinsorum W.H. Earle, Saguaro Bull. 30:65. 1976. USA. Arizona: 1 Oct 1975, J. Robbins & W.H. Earle s.n. (HOLOTYPE). ASU 83993.

Coryphantha bernalensis L. Bremer, Cact. Succ. J. (U.S.) 56:165. 1984. Mexico. Queretaro: 14 Oct 1976, L. Bremer 1076-8 (HOLOTYPE). ASU 132677.

Coryphantha cuencamensis L. Bremer, Cact. Succ. J. (U.S.) 52:183. 1980. Mexico. Durango: 26 Mar 1979, L. Bremer 379-4 (HOLOTYPE). ASU 108730.

Coryphantha delicata L. Bremer, Cact. Succ. J. (U.S.) 51:76. 1979. Mexico. Tamaulipas; 11 Apr 1976, L. Bremer A476-7 (HOLOTYPE). ASU 100000.

Coryphantha grata L. Bremer, Cact. Succ. J. (U.S.) 53:276. 1981. Mexico. Tamaulipas; 1 Jan 1981, A.B. Lau s.n. (HOLOTYPE). ASU 115766.

Coryphantha laredoi C. Glass & R. Foster, Cact. Succ. J. (U.S.) 50:235. 1978. Mexico. Coahuila: 1 Feb 1972, C. Glass & R. Foster 3761 (ISOTYPE). ASU 104851.

Coryphantha laui L. Bremer, Cact. Succ. J. (U.S.) 51:278. 1979. Mexico. Coahuila: n.d., L. Bremer 476-3 (HOLOTYPE). ASU 108723.

Coryphantha maliterrarum L. Bremer, Cact. Succ. J. (U.S.) 56:71. 1984. Mexico. Queretaro: 13 Oct 1976, L. Bremer 1076-7 (HOLOTYPE). ASU 128514.

Coryphantha pusilliflora L. Bremer, Cact. Succ. J. (U.S.) 54:133. 1982. Mexico. Coahuila: 1 Jan 1977, A.B. Lau s.n. [= L. Bremer 477-2] (HOLOTYPE). ASU 121235.

Coryphantha vivipara (T. Nuttall) N.L. Britton & J.N. Rose var. **buoflame** P.C. Fischer, Cact. Succ. J. (U.S.) 52:28. 1980. USA. Arizona: 22 May 1979, P.C. Fischer 6582 (ISOTYPE). ASU 110901.

Cylindropuntia delgadilloana J.P. Rebman & D.J. Pinkava, J. Arizona-Nevada Acad. Sci. 33:154. 2001. Mexico. Baja California: 9 Apr 1994, J.P. Rebman 2566 (HOLOTYPE). ASU 195838.

Echinocereus mapimensis E. Anderson, W.C. Hodgson & P. Quirk, Cact. Succ. J. (U.S.) 70:285. 1998. USA. Arizona: 22 Aug 1971, D. Keil 8136 with L.A. McGill (ISOTYPE). ASU 216692.

Echinocereus santaritensis W. Blum & J. Rutow, in W. Blum, Der Echinocereenfreund 12:93. 1999. USA. Arizona: 16 Apr 1996, J. Rutow JR 52-56 (HOLOTYPE). ASU 211396.

Mammillaria miegiana W.H. Earle, Saguaro Bull. 26:77. 1972. Mexico. Sonora: 15 May 1968, W.H. Earle s.n. (ISOTYPE). ASU 50081.

Mammillaria tobuschii W.T. Marshall, Saguaro Bull. 6:79. 1952. USA. Texas: 24 Jun 1952, W.T. Marshall & E.T. Blakely 1501 (ISOTYPE). ASU 44125.

Opuntia amarilla D. Griffiths, Bull. Torrey Bot. Club 46:205. 1919. Mexico. Tabasco: 4 Aug 1905, D. Griffiths 8032 (ISOLECTOTYPE). ASU 129843.

Opuntia anteojoensis D.J. Pinkava, Madroño 23:75. 1976. Mexico. Coahuila: 7 May 1973, M.C. Johnston 10911 with T.L. Wendt & F. Chiang (ISOTYPE). ASU 59583.

Opuntia crystallenia D. Griffiths, Bull. Torrey Bot. Club 43:528. 1916. Mexico. Tabasco: 1 Aug 1905, D. Griffiths 8030 (ISOTYPES). ASU 133265, 140760.

Opuntia diversispina D. Griffiths, Bull. Torrey Bot. Club 46:197. 1919. origin unknown: D. Griffiths 2836 (ISOTYPE). ASU 141496.

Opuntia edwardsii V. Grant & K.A. Grant, Bot. Gaz. 140:205. 1979. USA. Texas: 20 Jan 1979, V. Grant 79-1 (ISOTYPE). ASU 210871.

Opuntia eocarpa D. Griffiths, Proc. Biol. Soc. Wash. 29:11. 1916. USA. Arizona: 1 Sep 1911, D. Griffiths 10452 (ISOTYPE). ASU 140753.

Opuntia gorda D. Griffiths, Monatsschr. Kakteenk. 23:134. 1913. Mexico. Aguas Calientes: Aug 1905, D. Griffiths 8092 (ISOTYPES). ASU 129842, 133264.

Opuntia intricata D. Griffiths, Proc. Biol. Soc. Wash. 29:10. 1916. USA. California: 1 May 1912, D. Griffiths 10372 (ISOTYPE). ASU 140754.

Opuntia ithypetala D. Griffiths, Bull. Torrey Bot. Club 43:529. 1916. USA. Texas: San Antonio Garden SAG506 (ISOTYPE). ASU 141497.

Opuntia lindsayi J.P. Rebman, Cact. & Succ. J. (U.S.) 69:67. 1997. Mexico. Baja California: 24 Jun 1994, J.P. Rebman 2782 with C.A. Cano & M.E. Resendiz (HOLOTYPE). ASU 195943.

Opuntia linguiformis D. Griffiths, Rep. (Annual) Missouri Bot. Gard. 19:270. 1908. USA. Texas: Aug. 1906, D. Griffiths 8377 (ISOTYPE). ASU 140761.

Opuntia pachona D. Griffiths, Rep. (Annual) Missouri Bot. Gard. 21:168, plate 22 (in part). 1910. Mexico. Zacatecas: 19 Sep 1905, D. Griffiths 8141 (ISOTYPES). ASU 129844, 133255.

Opuntia pinkavae B.D. Parfitt, Rhodora: 99:223. 1998. USA. Arizona: 30 May 1980, B.D. Parfitt 2874 (HOLOTYPE). ASU 111287.

Opuntia sanfelipensis J.P. Rebman, Hasseltonia 6:17. 1999. Mexico. Baja California: 8 Apr 1994, J.P. Rebman 2540 (HOLOTYPE). ASU 195789.

Opuntia valida D. Griffiths, Proc. Biol. Soc. Wash. 27:24. 1914. USA. New Mexico: 1908, D. Griffiths 9194 (ISOTYPE). ASU 140780.

Opuntia x campii M.A. Baker & D.J. Pinkava [= **O. acanthocarpa** G. Engelmann & J.M. Bigelow x **O. bigelovii** Engelmann], Cact. Succ. J. (U.S.) 71:320. 1999. USA. Arizona: 9 Mar 1995, M.A. Baker 11661 (HOLOTYPE of 3 sheets). ASU 203945, 203946, 203947.

Sclerocactus parviflora D.Woodruff & L.D.Benson var. **blessingiana** W.H. Earle, Saguaro and Bull. 34:29. 1980. USA. Arizona: 10 Mar 1978, W.H. Earle s.n. (HOLOTYPE). ASU 108791.

Turbinicarpus booleanus G.S. Hinton, Phytologia 80:62. 1996. Mexico. Nuevo Leon: 1 Mar 1992, G.B. Hinton et al. 21805 (ISOTYPE). ASU 186715.

CAPRIFOLIACEAE

Abelia occidentalis J.A. Villarreal, Brittonia 49:84. 1997. Mexico. Durango: 22 Aug 1995, J.A. Villarreal et al. 8882 (ISOTYPE). ASU 235854.

Viburnum cuneifolius H.H. Bartlett, Proc. Amer. Acad. Arts 45:635. 1909. Mexico. Nuevo Leon: 27 Mar 1906, C.G. Pringle 10234 (ISOTYPE). ASU 7545.

CELASTRACEAE

Canotia wendtii M.C. Johnston, Brittonia 27:121. 1975. Mexico. Chihuahua: 25 Aug 1973, M.C. Johnston et al. 12345 (ISOTYPE). ASU 137501.

Celastrus tetramerus P.C. Standley, Contr. U.S. Natl. Herb. 23:679. 1923. Mexico. Guerrero: 8 Oct 1906, C.G. Pringle 10319 (ISOTYPE). ASU 69983.

CHENOPodiaceae

Atriplex frankenoides R. Moran, Phytologia 30:1. 1975. Mexico. Baja California Sur: 26 Mar 1974, R. Moran 21184 (ISOTYPE). ASU 84120.

Nitrophila mohavensis P.A. Munz & J.C. Roos, Alico 3:112. 1955. USA. California: 15 Jun 1954, J.C. Roos & A.R. Roos 6140 (ISOTYPE). ASU 133206.

CISTACEAE

Halimium exaltatum J.N. Rose & P.C. Standley, Contr. U.S. Natl. Herb. 23:833. 1923. Mexico. Michoacan: C.G. Pringle 10409 (ISOTYPE). ASU 16235, not found.

CONVOLVULACEAE

Ipomoea igualensis C.A. Weatherby, Proc. Amer.

Acad. Arts 45:427. 1910. Mexico. Guerrero: 21 Sep 1905, C.G. Pringle 10054 (ISOTYPE). ASU 50589.

CROSSOSOMATACEAE

Glossopetalon spinescens A. Gray var. **microphyllum** N.H. Holmgren, Brittonia 40: 272. 1988. USA. Utah: 23 May 1987, N.H. Holmgren 11292 with P.K. Holmgren (ISOTYPE). ASU 215438.

EUPHORBIACEAE

Acalypha salicoides H.H. Rusby, Descr. S. Amer. Pl.:46-47. 1920. Colombia. Santa Marta: 1898-1901, H.H. Smith 1428 (ISOTYPE). ASU 127470.

Euphorbia aaron-rossii A.H. Holmgren & N. Holmgren, Brittonia 40:357. 1988. USA. Arizona: 5 May 1971, A.H. Holmgren et al. 15558 (ISOTYPE). ASU 177194.

Euphorbia ariensis F.W.H.A. Humboldt, A.J.A. Bonpland & K.S. Kunth var. **villicauli** M.L. Fernald, Proc. Amer. Acad. Arts 43:62. 1907. Mexico. Michoacan: 29 Oct 1905, C.G. Pringle 10116 (ISOTYPE). ASU 50606.

Euphorbia chalicophila C.A. Weatherby, Proc. Amer. Acad. Arts 45:426. 1910. Mexico. Jalisco: 12 Oct 1903, C.G. Pringle 11846 (ISOTYPE). ASU 50590.

Euphorbia henricksonii M.C. Johnston, Madroño 22:374. 1974. Mexico. Chihuahua: 29 Sep 1972, M.C. Johnston 9585 with F. Chiang & T.L. Wendt (ISOTYPE). ASU 137473.

Manihot intermedia C.A. Weatherby, Proc. Amer. Acad. Arts 45:427. 1910. Mexico. Guerrero: 27 Jul 1907, C.G. Pringle 13938 (ISOTYPE). ASU 50591.

FABACEAE

Astragalus ackermanii R. Barneby, Brittonia 32:26. 1980. USA. Nevada: 27 May 1979, N.H. Holmgren et al. 9200 (ISOTYPE). ASU 113747.

Astragalus aequalis I.W. Clokey, Madroño 6:215. 1942. USA. Nevada: 14 Jun 1937, I.W. Clokey 7572 (ISOTYPE). ASU 66709.

Astragalus atwoodii S.L. Welsh & K.H. Thorne, Great Basin Naturalist 37:103. 1977. USA. Arizona: 15 Jun 1976, N.D. Atwood 6794 (ISOTYPE). ASU 108002.

Astragalus chuskanus R. Barneby & R. Spellenberg, Brittonia 39:188. 1987. USA. New Mexico: 28 Jun 1986, R. Spellenberg et al. 8521 (ISOTYPE). ASU 148180.

Astragalus holmgreniorum R. Barneby, Brittonia 32:24. 1980. USA. Arizona: 25 May 1979, N.H. Holmgren et al. 9175 (ISOTYPE). ASU 113742.

Astragalus tortipes J.L. Anderson & J.M. Porter, Syst. Bot. 19:116. 1994. USA. Colorado: 25 Apr 1989, J.L. Anderson 89-16 (ISOTYPE). ASU 200009.

Ateleia herbert-smithii A. Pittier, Contr. U.S. Naturalist Herb. 20:112. 1918. Colombia. Santa Marta: 1898-1901, H.H. Smith 817 (ISOTYPE). ASU 127480.

Coursetia paniculata M. Sousa, Syst. Bot. 12:113. 1987. Mexico. Oaxaca: 9 Mar 1985, M. Lavin et al. 5320 (ISOTYPE). ASU 150423.

Dalea ananassa R. Barneby, Mem. New York Bot. Gard. 27:175. 1977. Mexico. Sonora: 26 Oct 1961, H.S. Gentry, A.S. Barclay & Arguelles 19384 (ISOTYPE). ASU 79047.

Lathyrus grimesii R. Barneby, Intermount. Flora 3:208. 1989. USA. Nevada: 24 Jun 1981, N.H. Holmgren et al. 9902 (ISOTYPE). ASU 177193.

Lathyrus hitchcockianus R. Barneby & J.L. Reveal, Aliso 7:362. 1971. USA. Nevada: 4 May 1970, J.L. Reveal 2202 (ISOTYPE). ASU 41443.

Lotus mearnsii (N.L. Britton) E.L. Greene var. **equisolensis** J.L. Anderson, Madroño 43:261. 1996. USA. Arizona: 3 Apr 1987, J.L. Anderson 87-21 (HOLOTYPE). ASU 166482.

Lupinus bicolor J. Lindley subsp. **marginatus** D.B. Dunn, Aliso 3:159. 1955. USA. California: 19 Apr 1946, D.B. Dunn & C. Epling 2129 (ISOTYPE). ASU 67145.

Lupinus lepidus D. Douglas subsp. **medius** L.E. Detling, Amer. Midl. Naturalist 45:488. 1951. USA. Oregon: 17 Aug 1949, L.E. Detling 6546 (ISOTYPE). ASU 77469.

Mimosa unipinnata B.D. Parfitt & D.J. Pinkava, Brittonia 30:172. 1978. Mexico. Coahuila: 14 Aug 1975, D.J. Pinkava P13073 (HOLOTYPE). ASU 89319.

Oxytropis deflexa (P.M. Pallas) A.P. de Candolle var. **pulcherrima** S.L. Welsh & A. Huber, Great Basin Naturalist 55:277. 1995. USA. Utah: 18 Jul 1994, A. Huber 1673 (ISOTYPE). ASU 209524.

FAGACEAE

Quercus acherdophylla W. Trelease, Mem. Natl. Acad. Sci. 20:283, plate 367. 1924. Mexico. Puebla: 1 Sep 1904, C.G. Pringle 10008 (ISOTYPE). ASU 50601.

Quercus hypoxantha W. Trelease, Mem. Natl. Acad. Sci. 20:170, plate 339. 1924. Mexico. Coahuila: 12 Apr 1906, C.G. Pringle 10227 (ISOTYPE). ASU 31304.

Quercus mcvaughii R. Spellenberg, Amer. J. Bot. 79:1200. 1992. Mexico. Chihuahua: 22 Jun 1989, R. Spellenberg et al. 9281 (ISOTYPE). ASU 181983.

Quercus rysophylla C.A. Weatherby, Proc. Amer. Acad. Sci. 45:423. 1910. Mexico. Nuevo Leon: 27 Mar 1906, C.G. Pringle 10025 (ISOSYNTYPE). ASU 50581.

Quercus rysophylla C.A. Weatherby, Proc. Amer. Acad. Sci. 45:423. 1910. Mexico. Nuevo Leon: 12 Mar 1906, C.G. Pringle 10226 (ISOSYNTYPE). ASU 50582.

Quercus rysophylla C.A. Weatherby, Proc. Amer. Acad. Sci. 45:423. 1910. Mexico. Nuevo Leon: 10 Jul 1907, C.G. Pringle 10379 (ISOSYNTYPE). ASU 50583.

Quercus subtriloba W. Trelease, Mem. Natl. Acad. Sci. 20:81, plate 118. 1924. Mexico. Hidalgo: 12 Sep 1906, C.G. Pringle 10303 (ISOTYPE). ASU 50600.

GENTIANACEAE

Centaurium namophilum J.L. Reveal, C.R. Bloome & J. Beatley, Bull. Torrey Bot. Club 100: 353. 1973. USA. Nevada: 25 Jul 1972, J. Beatley 13447 with J.L. Reveal (ISOTYPE). ASU 50077.

Centaurium pusillum A. Eastwood, Proc. Amer. Acad. Arts 44:605. 1909. Mexico. Michoacan: 29 Nov 1907, C.G. Pringle 10408 (ISOTYPE). ASU 32167.

Gentiana durangensis J.A. Villarreal, Acta Bot. Mex. 34:49. 1996. Mexico. Durango: 6 Oct 1985, S. González 3464 (ISOTYPE). ASU 235855.

Gentiana puberulenta J.S. Pringle, Rhodora 68:213. 1966. USA. Illinois: 7 Oct 1906, Chase 1276 (ISOTYPE). ASU 32101.

Halenia hintonii A.A. Bullock, Hooker's Icon. Pl. 34:tab. 3399, 1939. Mexico. Mexico: 9 Aug 1935, G.B. Hinton 8273 (ISOTYPE). ASU 152531.

GERANIACEAE

Geranium toquimense N.H. Holmgren & A.H. Holmgren, Brittonia 29:34. 1974. USA. Nevada: 3 Aug 1964, N.H. Holmgren 1518 with J.L. Reveal (ISOTYPE). ASU 65091.

HYDROPHYLACEAE

Phacelia beatleyae J.L. Reveal & L.C. Constance,

Brittonia 24:199. 1972. USA. Nevada: 29 Apr 1971, J. Beatley 12358 (ISOTYPE). ASU 50080.

Phacelia crenulata J. Torrey in S. Watson var. **angustifolia** N.D. Atwood, Great Basin Naturalist: 35:158. USA. Arizona: 18 May 1970, N.D. Atwood 2597 (ISOTYPE). ASU 203838.

Phacelia cronquistiana S.L. Welsh, Rhodora 95:402. 1993. USA. Utah: 13 Jun 1983, N.D. Atwood 9458 (ISOTYPE). ASU 130043.

Phacelia mammillarensis N.D. Atwood, Phytologia 26:437. 1973. USA. Utah: 6 May 1970, N.D. Atwood 9809 (ISOTYPES). ASU 71165, 203837.

Phacelia marshall-johnstonii N.D. Atwood & D.J. Pinkava, Madroño 24:212. 1977. Mexico. Coahuila: 15 Aug 1975, D.J. Pinkava 13100 with T. Reeves (HOLOTYPE). ASU 92596.

HYPERICACEAE

Hypericum hintonii A.A. Bullock, Kew Bull. 1936:390. 1936. Mexico. Mexico: 21 Sep 1932, G.B. Hinton 1796 (ISOTYPE). ASU 50465.

LAMIACEAE

Salvia flaccidiflora M.L. Fernald, Proc. Amer. Acad. Arts 43:66. 1907. Mexico. Hidalgo: 6 Sep 1906, C.G. Pringle 10298 (ISOTYPE). ASU 32872.

Salvia hispanica C. Linnaeus var. **chionocalyx** M.L. Fernald, Amer. Acad. Arts 43:63. 1907. Mexico. Michoacan: 16 Oct 1904, C.G. Pringle 8837-1/2 (ISOTYPE). ASU 33604.

Salvia lilacina M.L. Fernald, Proc. Amer. Acad. Arts 45:418. 1910. Mexico. Michoacan: 15 Oct 1904, C.G. Pringle 13279 (ISOTYPE). ASU 33625.

Salvia muralis M.L. Fernald, Amer. Acad. Arts 43:65. 1907. Mexico. Guerrero: 28 Sep 1905, C.G. Pringle 10072 (ISOTYPE). ASU 50599.

Salvia subpatens E. Epling, Repert. Spec. Nov. Regni Veg. Beih. 110:97. 1938. Mexico. Mexico: 27 Jul 1933, G.B. Hinton 4376 (ISOTYPE). ASU 54499.

Salvia uruapana M.L. Fernald, Proc. Amer. Acad. Arts 45:418. 1910. Mexico. Michoacan: 16 Oct 1904, C.G. Pringle 13280 (ISOTYPE). ASU 33675.

Satureja maderensis J. Henrickson, Brittonia 33:211. 1981. Mexico. Coahuila: 5 Aug 1973, J. Henrickson 11888 with T.L. Wendt (ISOTYPE). ASU 74254.

Scutellaria lutilabia M. Lane & G.L. Nesom, Madroño 35:112. 1988. Mexico: G.L. Nesom 4273 (ISOTYPE). ASU not found.

LOASACEAE

Mentzelia collomiae C.M. Christy, Novon 7:25. 1997. USA. Arizona: 25 Sep 1994, C.M. Christy 2385 (HOLOTYPE). ASU 200000.

Mentzelia goodrichii K.H. Thorne & S.L. Welsh, Rhodora 95:407. 1993. USA. Utah: 15 Jul 1992, S. Goodrich 23806 (ISOTYPE). ASU 203839.

LORANTHACEAE

Struthanthus alni H.H. Bartlett, Proc. Amer. Acad. Arts 44:94. 1909. Mexico. Oaxaca: 22 May 1906, C.G. Pringle 10244 (ISOTYPE). ASU 37488.

LYTHRACEAE

Cuphea imberbis R.N. Rose, In E. Koehne, Bot. Jahrb. Syst. 41:94. 1907. Mexico. Hidalgo: 29 Jul 1904, C.G. Pringle 8979 (ISOTYPE). ASU 50593.

Cuphea lanceolata W. Aiton, Hortus Kewensis. III (ed. 2):150. 1911. Neotyped by S. Graham in Syst. Bot. Monogr. 20:84. 1988. Mexico. Mexico: 30 Sep 1904, C.G. Pringle 11983 (ISONEOTYPE). ASU 38289.

MALVACEAE

Abutilon holosericeum G.H.A. Scheele, Linnaea 21:471. 1848. USA. Texas: 1846, Lindheimer 354 (ISOTYPE). ASU 37985.

Abutilon pinkavae P.A. Fryxell, Phytologia: 37:285. 1977. Mexico. Coahuila: 14 Aug 1975, D.J. Pinkava 13044 with T. Reeves (HOLOTYPE). ASU 79373.

Decaschistia brynesii P.A. Fryxell, Austral. J. Bot. 22:188. 1974. Australia. Northern Territory: 30 Jan 1969, N. Byrnes 1320 (ISOTYPE). ASU 199035.

Decaschistia brynesii P.A. Fryxell subsp. **landulacea** P.A. Fryxell, Austral. J. Bot. 22:189. 1974. Australia. Northern Territory: 28 May 1971, N. Byrnes 2284 (ISOTYPE). ASU 206992.

Hibiscus brynesii F.D. Wilson, Austral. J. Bot. 22:177. 1974. Australia. Northern Territory: 20 Feb 1969, N. Byrnes 1390 (ISOTYPES). ASU 199036, 199038, 199039.

Sidalcea stipularis J.T. Howell & G.H. True, Four Seasons 4:20. 1972. USA. California: 30 Jul 1973, G.H. True & J.T. Howell 7630 (ISOTYPE). ASU 155156.

MELIACEAE

Trichilia oblanceolata H.H. Rusby, Descr. New Sp. South Amer. Pl.:36-37. 1920. Colombia.

Santa Marta: 18 Jan 1889-1901, H.H. Smith 447 (ISOTYPE). ASU 127617.

MENISPERMACEAE

Menispermum mexicanum J.N. Rose, Contr. U.S. Natl. Herb. 13:302. 1911. Mexico. Nuevo Leon: 8 Jul 1907, C.G. Pringle 10378 (ISOTYPE). ASU 50594.

MORACEAE

Ficus subrotundifolia J.M. Greenman, Proc. Amer. Acad. Sci. 41:237. 1905. Mexico: Jalisco: 28 Sep 1903, C.G. Pringle 11850 (ISOSYNTYPE). ASU 50596.

MYRTACEAE

Calycopus bolivarensis L.R. Landrum, Ann. Missouri Bot. Gard. 76:930. 1989. Venezuela. Bolivar: 5 Mar 1977, A. Fernandez 3068 (ISOTYPE). ASU 160293.

Campomanesia espiritosantensis L.R. Landrum, Brittonia 39:245. 1987. Brazil. Espírito Santo: 27 Jan 1984, D.A. Folli 494 (ISOTYPE). ASU 145539.

Eugenia anglohondurensis C.L. Lundell, Wrightia 2:123. 1961. British Honduras. Stann Creek District: 30 Aug 1954, P.H. Gentle 8354 (ISOTYPE). ASU 153701.

Eugenia blanda M. Sobral, Bradea 26:234. 1993. Brazil. Minas Gerais: 12 Jun 1990, G. & M. Hatschbach 54169 with V. Nicolack (ISOTYPE). ASU 209876.

Eugenia gentlei C.L. Lundell, Publ. Carnegie Inst. Wash. 478 (Veg. Peten):216. 1937. British Honduras. Belize: 15 Jul 1935, P.H. Gentle 1684 (ISOTYPE). ASU 192765.

Myrcia cymosopaniculata H.F.C. Kiaerskou, Enum. Myrt. Bras. 90. 1893. Brazil: n.d., Glaziou 11986 (ISOTYPE). ASU 187700.

Myrteola microphylla O.K. Berg var. **australis** F.L.E. Diels, Bot. Jahrb. Syst. 37:593. 1906. Bolivia. Mapiri: 1892, M. Bang 1573 (ISOSYNTYPE). ASU 152743.

Myrteola microphylla O.K. Berg var. **australis** F.L.E. Diels, Bot. Jahrb. Syst. 37:593. 1906. Bolivia. Mapiri: 1892, M. Bang 1911 (ISOSYNTYPE). ASU 152744.

NYCTAGINACEAE

Abronia argillacea S.L. Welsh & S. Goodrich, Great Basin Naturalist 40:78. 1980. USA. Utah:

30 May 1979, S.L. Welsh, E. Welsh & M. Welsh 16689 (ISOTYPE). ASU 108003.

Mirabilis pringlei C.A. Weatherby, Proc. Amer. Acad. Arts 45:424. 1910. Mexico. Guerrero: 23 Jul 1907, C.G. Pringle 10384 (ISOTYPE). ASU 50597.

ONAGRACEAE

Gayophytum decipiens H. Lewis & J. Szwedkowski, Brittonia 16:368. 1964. USA. California: 8 Aug 1962, H. Lewis 1311 (ISOTYPE). ASU 127955.

POLEMONIACEAE

Gilia nyensis J.L. Reveal, Bull. Torrey Bot. Club 96:480. 1969. USA. Nevada: 29 May 1968, J.L. Reveal 1048 (ISOTYPE). ASU 30054.

Ipomopsis sancti-spiritus D. Wilken & R. Fletcher, Brittonia 40:48. 1988. USA. New Mexico: 15 Jul 1986, D. Wilken & R. Fletcher 14645 (ISOTYPE). ASU 154587.

Linanthus jamaicensis R. Moran, Madroño 24:147. 1977. Mexico. Baja California: 19 May 1973, R. Moran 20930 (ISOTYPE). ASU 140789.

POLYGONACEAE

Chorizanthe rosulenta J.L. Reveal, Phytologia 66:95. 1989. Mexico. Baja California: 23 Mar 1988, J.L. Reveal et al. 6729 (ISOTYPE). ASU 153148.

Dedeckera eurekensis J.L. Reveal & J.T. Howell, Brittonia 28:246. 1976. USA. California: 29 Jul 1975, J.L. Reveal et al. 3909 (ISOTYPE). ASU 119050.

Eriogonum aliquantum J.L. Reveal, Phytologia 34:460. 1976. USA. New Mexico: 14 Jul 1972, J.L. Reveal 2770 with C. Reveal (ISOTYPE). ASU 119046.

Eriogonum apachense J.L. Reveal, J. Arizona-Nevada Acad. Sci. 5:222. 1969. USA. Arizona: 7 Sep 1968, E. Lehto 13400 with D.J. Pinkava & D. Keil (ISOTYPES). ASU 12590, 12589, 116493, 140790.

Eriogonum argophyllum J.L. Reveal, Phytologia 23:168. 1972. USA. Nevada: 7 Jul 1969, N.H. Holmgren 3661 with P.M. Kern (ISOTYPE). ASU 40397.

Eriogonum atrorubens G. Engelmann var. **nemorosum** W.J. Hess & J.L. Reveal, Great Basin Naturalist 36:302. 1976. Mexico. Durango: 11 Aug 1971, J.L. Reveal 2737 with W.J. Hess & R.W. Kiger (ISOTYPE). ASU 50073.

Eriogonum beatleyae J.L. Reveal, Aliso 7:415. 1972. USA. Nevada: 26 Jun 1971, J.L. Reveal et al. 2498 (ISOTYPE). ASU 50070.

Eriogonum bifurcatum J.L. Reveal, Aliso 7:357. 1971. USA. Nevada: 13 Jun 1970, J.L. Reveal 2283 (ISOTYPE). ASU 50069.

Eriogonum capistratum J.L. Reveal, Phytologia 66:254. 1989. USA. Idaho: 11 Jul 1975, J.L. Reveal 3876 with B.J. Ertter (ISOTYPE). ASU 119199.

Eriogonum capistratum J.L. Reveal var. **welshii** J.L. Reveal, Phytologia 66:257. 1989. USA. Idaho: 16 Jun 1976, J.L. Reveal 4501 with S.L. Welsh (ISOTYPE). ASU 119205.

Eriogonum concinnum J.L. Reveal, Bull. Torrey Bot. Club 96:476. 1969. USA. Nevada: 5 Jul 1968, J.L. Reveal 1501 (ISOTYPE). ASU 30850.

Eriogonum correllii J.L. Reveal, Sida 3:198. 1968. USA. Texas: 23 Aug 1967, J.L. Reveal 878 with G. Davidse (ISOTYPE). ASU 13753.

Eriogonum corymbosum G. Bentham var. **albogilvum** J.L. Reveal, Great Basin Naturalist 27:218. 1968. USA. Utah: 26 Aug 1967, J.L. Reveal 726 with C.G. Reveal (ISOTYPE). ASU 13754.

Eriogonum corymbosum G. Bentham var. **davidsei** J.L. Reveal, Great Basin Naturalist 27:216. 1968. USA. Utah: 9 Sep 1967, J.L. Reveal 956 with G. Davidse (ISOTYPE). ASU 13756.

Eriogonum corymbosum G. Bentham var. **erectum** J.L. Reveal & J.D. Brotherson, Great Basin Naturalist 27:213. 1968. USA. Utah: 16 Aug 1966, N.H. Holmgren 3022 with J.L. Reveal (ISOTYPE). ASU 13659.

Eriogonum corymbosum G. Bentham var. **velutinum** J.L. Reveal, Great Basin Naturalist: 27:224. 1968. USA. New Mexico: 5 Sep 1967, J.L. Reveal 919 with G. Davidse (ISOTYPE). ASU 13745.

Eriogonum cronquistii J.L. Reveal, Madroño 19:289. 1969. USA. Utah: 14 Aug 1966, N.H. Holmgren 3010 with J.L. Reveal (ISOTYPE). ASU 13661.

Eriogonum deflexum J. Torrey var. **nevadense** J.L. Reveal, Phytologia 25:206. 1973. USA. Nevada: 18 Jul 1972, J.L. Reveal 2785 with C.G. Reveal (ISOTYPE). ASU 50075.

Eriogonum deflexum J. Torrey var. **rectum** J.L. Reveal, Phytologia 66:263. 1989. USA. California: 5 Jun 1987, J.L. Reveal 6385 with C.R. Broome (ISOTYPE). ASU 153150.

Eriogonum duchesense J. Reveal, Phytologia 25:183. 1973. USA. Utah: 2 Sep 1964, J.L. Reveal 678 (ISOTYPE). ASU 13664.

Eriogonum ericifolium J. Torrey & A. Gray var. **thornei** J.L. Reveal & J. Henrickson, Madroño 23:205. 1975. USA. California: 26 Aug 1973, J. Henrickson 12676 (ISOTYPE). ASU 114198.

Eriogonum fimbriatum W.J. Hess & J.L. Reveal, Great Basin Naturalist 36:308. 1976. Mexico. Nuevo Leon: 19 Sep 1972, J.L. Reveal 3144 with W.J. Hess (ISOTYPE). ASU 50072.

Eriogonum gracile G. Bentham var. **incultum** J.L. Reveal, Phytologia 66:265. 1969. USA. California: 28 Jun 1987, J.L. Reveal 6620 with C.R. Broome (ISOTYPE). ASU 153149.

Eriogonum humivagans J.L. Reveal, Phytologia 19:291. 1968. USA. Utah: 13 Aug 1966, N.H. Holmgren 3001 with J.L. Reveal (ISOTYPE). ASU 13667.

Eriogonum hylophilum J.L. Reveal & J.D. Brotherson, Great Basin Naturalist 27:190. 1968. USA. Utah: 15 Aug 1966, N.H. Holmgren 3017 with J.L. Reveal (ISOTYPE). ASU 13668.

Eriogonum inflatum J. Torrey & J.C. Frémont var. **contiguum** J.L. Reveal, Aliso 7:221. 1970. USA. Nevada: 3 Jun 1969, J.L. Reveal 2157 with M.E. Matthews (ISOTYPE). ASU 50076.

Eriogonum lancifolium J.L. Reveal & J.D. Brotherson, Great Basin Naturalist 27:187. 1968. USA. Utah: 9 Sep 1967, J.L. Reveal 957 with G. Davidse (ISOTYPE). ASU 13750.

Eriogonum leptocladon J. Torrey & A. Gray var. **papiliunculum** J.L. Reveal, Brittonia 26:92. 1974. USA. Arizona: 17 Aug 1972, J.L. Reveal 2906 (ISOTYPE). ASU 50064.

Eriogonum lewisii J.L. Reveal, Great Basin Naturalist 45:277. 1985. USA. Utah: 30 Jul 1976, J.L. Reveal 4596 with C.G. Reveal (ISOTYPE). ASU 119203.

Eriogonum meledonum J.L. Reveal, Phytologia 66:254. 1989. USA. Idaho: 5 Jul 1974, J.L. Reveal 3674 (ISOTYPE). ASU 116438.

Eriogonum microthecum T. Nuttall var. **corymbosoides** J.L. Reveal, Brigham Young Univ. Sci. Bull. Biol. Ser. 13:25. 1968. USA. California: 10 Sep 1968, J.L. Reveal 2090 (ISOTYPE). ASU 50071.

Eriogonum microthecum T. Nuttall var. **lapidicola** J.L. Reveal, Brigham Young Univ. Sci. Bull. Biol. Ser. 13:28. 1968. USA. Nevada:

25 Aug 1968, J.L. Reveal 1926 with N.H. Holmgren (ISOTYPE). ASU 30156.

Eriogonum mortonianum J.L. Reveal, Brittonia: 26:90. 1974. USA. Arizona: 16 Aug 1972, J.L. Reveal 2904 (ISOTYPE). ASU 50068.

Eriogonum natum J.L. Reveal, Great Basin Naturalist 35:363. 1975. USA. Utah: 13 Aug 1975, J.L. Reveal 3924 with M.L. Reveal (ISOTYPE). ASU 119044.

Eriogonum ochrocephalum S. Watson var. **alexanderae** J.L. Reveal, Great Basin Naturalist 45:276. 1985. USA. Nevada: 21 Jun 1978, J.L. Reveal et al. 4737 (ISOTYPE). ASU 119197.

Eriogonum ochrocephalum S. Watson var. **sceptrum** J.L. Reveal, Phytologia 66:252. 1989. USA. Idaho: 7 Jul 1974, J.L. Reveal 3687 (ISOTYPE). ASU 116445.

Eriogonum ordii S. Watson, Proc. Amer. Acad. Arts 21:468. 1886. USA. Arizona: 1 Apr 1884, C.J. Lemmon 4189 (ISOTYPE). ASU 45045.

Eriogonum ovalifolium T. Nuttall var. **pansum** J.L. Reveal, Phytologia 66:259. 1989. USA. Idaho: 12 Jul 1975, J.L. Reveal 3883 with B.J. Ertter (ISOTYPE). ASU 119201.

Eriogonum pelinophilum J.L. Reveal, Great Basin Naturalist 33:120. 1973. USA. Colorado: 16 Jun 1972, J.L. Reveal 2780 with C.G. Reveal (ISOTYPE). ASU 50067.

Eriogonum pharnaceoides J. Torrey var. **cervinum** J.L. Reveal, Great Basin Naturalist 34:246. 1974. USA. Utah: 18 Aug 1973, N.D. Atwood 5895 with L.C. Higgins (ISOTYPE). ASU 11644.

Eriogonum preclarum J.L. Reveal, Brittonia 28:338. 1976. Mexico. Baja California: 9 Feb 1973, R. Moran 19964 with J.L. Reveal (ISOTYPE). ASU 116456.

Eriogonum prociduum J.L. Reveal, Aliso 7:417. 1972. USA. Oregon: 22 Jun 1971, J.L. Reveal 2458 (ISOTYPE). ASU 50066.

Eriogonum rupinum J.L. Reveal, Aliso 7:226. 1970. USA. Nevada: 9 Aug 1969, J. Beatley 9458 (ISOTYPE). ASU 50065.

Eriogonum saurinum J.L. Reveal, Great Basin Naturalist 27:196. 1968. USA. Utah: 15 Aug 1966, N.H. Holmgren 3019 with J.L. Reveal (ISOTYPE). ASU 13675.

Eriogonum scabrellum J.L. Reveal, Ann. Missouri Bot. Gard. 55:74. 1968. USA. Utah: 8 Sep 1967, J.L. Reveal 949 with G. Davidse (ISOTYPE). ASU 13755.

Eriogonum shockleyi S. Watson var. **packardae** J.L. Reveal, Phytologia 66:257. 1989. USA. Idaho: 7 Jul 1974, J.L. Reveal et al. 3686 (ISOTYPE). ASU 116433.

Eriogonum smithii J.L. Reveal, Great Basin Naturalist 27:202. 1968. USA. Utah: 14 Aug 1966, N.H. Holmgren 3012 with J.L. Reveal (ISOTYPE). ASU 13677.

Eriogonum soredium J.L. Reveal, Great Basin Naturalist 41:229. 1981. USA. Utah: 29 Aug 1980, S.L. Welsh et al. 20192 (ISOTYPE). ASU 120398.

Eriogonum thompsonae S. Watson var. **albiflorum** J.L. Reveal, Madroño 19:299. 1969. USA. Utah: 11 Aug 1966, N.H. Holmgren 2991 with J.L. Reveal (ISOTYPE). ASU 13681.

Eriogonum turneri J.L. Reveal, Sida 5:265. 1974. Mexico. Nuevo Leon: 19 Sep 1972, J.L. Reveal 3174 with W.J. Hess (ISOTYPE). ASU 50074.

Eriogonum umbellatum J. Torrey var. **chlorothamnus** J.L. Reveal, Calif. Fl. Suppl.: 44. 1968. USA. California: 23 Jul 1966, N.H. Holmgren 2938 with J.L. Reveal (ISOTYPE). ASU 13683.

Eriogonum umbellatum J. Torrey var. **furcosum** J.L. Reveal, Great Basin Naturalist 45:278. 1985. USA. California: 23 Aug 1975, J.L. Reveal 3971 (ISOTYPE). ASU 119048.

Eriogonum umbellatum J. Torrey var. **vernus** J.L. Reveal, Great Basin Naturalist 28:157. 1968. USA. Nevada: 4 Jun 1968, J.L. Reveal 1139 (ISOTYPE). ASU 30107.

Eriogonum verrucosum J.L. Reveal, Phytologia 66:253. 1989. USA. Idaho: 6 Jul 1974, J.L. Reveal 3678 (ISOTYPE). ASU 116444.

PORTULACACEAE

Claytonia lanceolata F.T. Pursh var. **idahoensis** R.J. Davis, Brittonia 18:294. 1966. USA. Idaho: 2 Jun 1962, R.J. Davis 6029 (ISOTYPE). ASU 93460.

Claytonia palustris J.R. Swanson & W.A. Kelly, Madroño 34:155. 1987. USA. California: 4 Jul 1959, J.R. Swanson 490 (ISOTYPE). ASU 152432.

PRIMULACEAE

Primula capillaris N.H. Holmgren & A.H. Holmgren, Brittonia 29:313. 1974. USA. Nevada: 15 Jul 1965, N.H. Holmgren 2154 with J.L. Reveal (ISOTYPE). ASU 65092.

Samolus ebracteatus F.W.H.A. Humboldt, A.J.A. Bonpland, K.S. Kunth var. **coahuilensis** J. Henrickson, Southw. Naturalist 28:312. 1983. Mexico. Coahuila: 23 Sep 1972, J. Henrickson 7950 (ISOTYPE). ASU 82091.

RANUNCULACEAE

Aquilegia scopulorum I. Tidestrom subsp. **perplexans** I.W. Clokey, Bull. S. Calif. Acad. Sci. 37:3. 1938. USA. Nevada: 16 Jul 1936, I.W. Clokey 7094 (ISOTYPE). ASU 66710.

Clematis coahuilensis D. Keil, Bull. Torrey Bot. Club 104:10. 1977. Mexico. Coahuila: 4 Aug 1973, J. Henrickson 11880 (ISOTYPE). ASU 108728.

Delphinium madrense S. Watson f. **insigne** J.A. Ewan, Univ. Colorado Stud. Ser. D, Phys. Sci. 2:165. 1945. Mexico. Nuevo Leon: 26 Sep 1934, C.G. Pringle 10178 (ISOTYPE). ASU 50614.

Delphinium subscandens J.A. Ewan, Univ. Colorado Stud. Ser. D, Phys. Sci.: 2:165. 1945. Mexico. Mexico: 25 Sep 1934, G.B. Hinton 6579 (ISOTYPE). ASU 42227.

Ranunculus pentadontus P.C. Standley, Field Mus. Naturalist Hist. Bot. Ser. 17:247. 1937. Mexico. Chihuahua: 17 Sep 1936, H.S. Gentry 2787 (ISOTYPE). ASU 79075.

ROSACEAE

Cercocarpus ledifolius T. Nuttall var. **intermontanus** N.H. Holmgren, Brittonia 39:424. 1987. USA. Utah: 24 May 1987, N.H. Holmgren 11298 with P.K. Holmgren (ISOTYPE). ASU 215437.

Ivesia rhypara B.J. Ertter & J.L. Reveal, Syst. Bot. 14:239. 1989. USA. Oregon: 13 Jul 1975, J.L. Reveal 3894 with B.J. Ertter (ISOTYPE). ASU 119052.

Potentilla angelliae N.H. Holmgren, Brittonia 39:342. 1987. USA. Utah: 10 Jul 1984, N.H. Holmgren & P.K. Holmgren 10623 (ISOTYPE). ASU 177195.

Potentilla basaltica A. Tiehm & B.J. Ertter, Brittonia 36:228. 1984. USA. Nevada: 31 May 1983, A. Tiehm 7770 with M. Lavin (ISOTYPE). ASU 141953.

Purshia pinkavae C. Schaack, Phytologia 63:301. 1987. USA. Arizona: 11 Apr 1987, C. Schaack 2046 with B. Schaack (ISOTYPES). ASU 152078, 154249.

Rosa stellata R. Weston subsp. **abyssa** A.M. Phil-

lips, Madroño 39:31. 1992. USA. Arizona: 15 Jun 1980, A.M. Phillips 80-103 (ISOTYPE). ASU 184800.

RUBIACEAE

Galium collomae J.T. Howell, Leafl. W. Bot. 5:150. 1949. USA. Arizona: 1937, Collom 596 (ISOTYPE). ASU 27801.

Hedyotis nigricans (J.B.A.P. de Monnet de Lamarck.) F.R. Fosberg var. **gypsophila** B.L. Turner, Phytologia: 79:15. 1995. Mexico. Nuevo Leon: 11 May 1981, G.B. Hinton et al. 18278 (ISOTYPE). ASU 131028.

Paederia pringlei J.M. Greenman, Proc. Amer. Acad. Arts 39:92. 1903. Mexico. Morelos: Oct 1902, C.G. Pringle 8682 (ISOTYPE). ASU 23846.

SALICACEAE

Salix melanopsis T. Nuttall var. **gracilis** C.R. Ball, Proc. Natl. Acad. USA 21:182. 1935. USA. California: 10 May 1931, H.E. Parks & J.B. Tracy 1021 (ISOSYNTYPE). ASU 73804.

Salix melanopsis T. Nuttall var. **gracilis** C.R. Ball, Proc. Natl. Acad. USA 21:182. 1935. USA. California: 30 May 1931, H.E. Parks & J.B. Tracy 935 (ISOSYNTYPE). ASU 73807.

Salix parksiana C.R. Ball, Univ. Calif. Publ. Bot. 17:400. 1934. USA. California: 21 May 1931, J.P. Parks 983 (ISOSYNTYPE). ASU 72617.

Salix parksiana C.R. Ball, Univ. Calif. Publ. Bot. 17:400. 1934. USA. California: 14 May 1931, J.P. Parks 962 (ISOSYNTYPE). ASU 72618.

Salix tracyi C.R. Ball, Univ. Calif. Publ. Bot. 17:403. 1934. USA. California: 15 May 1932, C.R. Ball, J.P. Parks & J.B. Tracy 1288 (ISOSYNTYPE). ASU 72619.

SAPINDACEAE

Urvillea biternata C.A. Weatherby, Proc. Amer. Acad. Arts 45:425. 1910. Mexico. Guerrero: 24 Jul 1907, C.G. Pringle 10380 (ISOTYPE). ASU 50598.

SCROPHULARIACEAE

Castilleja aquariensis N.H. Holmgren, Bull. Torrey Bot. Club 100:87. 1973. USA. Utah: 11 Aug 1970, N.H. Holmgren 4726 with P.K. Holmgren (ISOTYPE). ASU 65095.

Castilleja christii N.H. Holmgren, Bull. Torrey Bot. Club 100:91. 1973. USA. Idaho: 12 Jul 1966, N.H. Holmgren 2866 with J.L. Reveal (ISOTYPE). ASU 65096.

Castilleja dissitiflora N.H. Holmgren, Mem. New York Bot. Gard. 21:46. 1971. USA. Nevada: 3 Jul 1966, N.H. Holmgren 2772 with J.L. Reveal (ISOTYPE). ASU 21567.

Castilleja kaibabensis N.H. Holmgren, Bull. Torrey Bot. Club 100:89. 1973. USA. Arizona: 7 Aug 1970, N.H. Holmgren 4682 with P.K. Holmgren (ISOTYPE). ASU 65097.

Castilleja linifolia N.H. Holmgren, Brittonia 28:200. 1976. Mexico. Durango: 26 Sep 1973, J.L. Reveal 3482 with N.D. Atwood (ISOTYPE). ASU 130198.

Castilleja pringlei M.L. Fernald, Proc. Amer. Acad. Arts 40:56. 1904. Mexico. Hidalgo: 26 Aug 1902, C.G. Pringle 8666 (ISOSYNTYPE). ASU 50598.

Castilleja revealii N.H. Holmgren, Bull. Torrey Bot. Club 100:87. 1973. USA. Utah: 24 Jun 1965, N.H. Holmgren 2017 with J.L. Reveal (ISOTYPE). ASU 65100.

Castilleja salsuginosa N.H. Holmgren, Bull. Torrey Bot. Club 100:83. 1973. USA. Nevada: 4 Jul 1966, N.H. Holmgren 2764 (ISOTYPE). ASU 65101.

Mimulus gemmiparus W.A. Weber, Madroño 21:423. 1972. USA. Colorado: 8 Jul 1970, W.A. Weber & T. Grove 10462 (ISOTYPE). ASU 59439.

Penstemon acuminatus D. Douglas ex J. Lindley var. **latebracteatus** N.H. Holmgren, Brittonia 31:232. 1979. USA. Oregon: 21 May 1978, N.H. Holmgren 8741 with P.K. Holmgren (ISOTYPE). ASU 113745.

Penstemon angustifolius F.T. Pursh var. **vernalis** N.H. Holmgren, Brittonia 31:229. 1979. USA. Utah: 25 May 1978, N.H. Holmgren et al. 8748 (ISOTYPE). ASU 113757.

Penstemon barnebyi N.H. Holmgren, Brittonia 31:226. 1979. USA. Nevada: 23 Jun 1977, N.H. Holmgren 8492 (ISOTYPE). ASU 113746.

Penstemon debilis S.L. O'Kane & J.L. Anderson, Brittonia 39:412. 1987. USA. Colorado: 11 Jun 1986, S.L. O'Kane, Jr. & J.L. Anderson 2424 (ISOTYPE). ASU 152920.

Penstemon distans N.H. Holmgren, Brittonia 32:326. 1980. USA. Arizona: 25 May 1979, N.H. Holmgren et al. 9173 (ISOTYPE). ASU 113754.

Penstemon dolius M.E. Jones ex F.W. Pennell var. **duchenensis** N.H. Holmgren, Brittonia 31:219. 1979. USA. Utah: 25 May 1978, N.H. Holmgren et al. 8762 (ISOTYPE). ASU 113748.

Penstemon goodrichii N.H. Holmgren, Brittonia 30:416. 1978. USA. Utah: 25 May 1978, N.H. Holmgren et al. 8760 (ISOTYPE). ASU 113752.

Penstemon henricksonii R.M. Straw, Madroño 23:263. 1976. Mexico. Coahuila: 5 Aug 1973, J. Henrickson 11903 with T.L. Wendt (ISOTYPE). ASU 68898.

Penstemon immanifestus N.H. Holmgren, Brittonia 30:334. 1978. USA. Nevada: 23 Jun 1977, N.H. Holmgren 8493 with P.K. Holmgren (ISOTYPE). ASU 113749.

Penstemon moriahensis N.H. Holmgren, Brittonia 30:422. 1978. USA. Nevada: 17 Jul 1977, N.H. Holmgren 8609 with P.K. Holmgren (ISOTYPE). ASU 113753.

Penstemon mucronatus N.H. Holmgren, Brittonia 31:234. 1979. USA. Utah: 25 May 1978, N.H. Holmgren et al. 8747 (ISOTYPE). ASU 113755.

Penstemon navajoa N.H. Holmgren, Brittonia 30:419. 1978. USA. Utah: 13 Jul 1977, N.H. Holmgren 8587 with P.K. Holmgren (ISOTYPE). ASU 113751.

Penstemon pudicus J.L. Reveal & J. Beatley, Bull. Torrey Bot. Club 98:332. 1971. USA. Nevada: 5 Jul 1971, J. Beatley 12950 (ISOTYPE). ASU 50078.

Penstemon rhizomatous N.H. Holmgren, Brittonia 50:162. 1998. USA. Nevada: 4 Aug 1985, N.H. Holmgren 10967 with K.A. Vincent (ISOTYPE). ASU 215436.

Penstemon thurberi J. Torrey var. **anestius** J.L. Reveal & J. Beatley, Great Basin Naturalist 34:230. 1974. USA. Nevada: 20 Jun 1973, J. Beatley 13460 with T. Ackermann (ISOTYPE). ASU 116461.

Penstemon tiehmii N.H. Holmgren, Brittonia 50:159. 1998. USA. Nevada: 26 Jun 1986, A. Tiehm 10658 with S. Crisafulli (ISOTYPE). ASU 215439.

Seymeria deflexa A. Eastwood, Proc. Amer. Acad. Arts 44:607. 1909. Mexico. Nuevo Leon: 19 Sep 1907, C.G. Pringle 10398 (ISOTYPE). ASU 50579.

Stemodia macrantha B.L. Robinson, Proc. Amer. Acad. Arts 43:27. 1907. Mexico. Michoacan: 28 Jan 1907, C.G. Pringle 10356 (ISOTYPE). ASU 50622.

THEACEAE

Ternstroemia huasteca B. Bartholomew, *Phytologia* 64:458. 1988. Mexico. Hidalgo: 5 May 1987, *B. Bartholomew* 4035 (ISOTYPE). ASU 155155.

THYMELAEACEAE

Dirca mexicana G.L. Nesom & M.H. Mayfield, *Sida* 16:460. 1995. Mexico. Tamaulipas: 3 Mar 1995, *G. Nesom et al.* 7863 (ISOTYPE). ASU 202295.

TILIACEAE

Triumfetta columnarioides A.A. Bullock, *Kew Bull.* 1937:292. 1937. Mexico. Mexico: 10 Dec 1933, *G.B. Hinton* 4917 (ISOTYPE). ASU 59079.

Triumfetta quercetorum A.A. Bullock, *Kew Bull.* 1937:295. 1937. Mexico. Mexico: 13 Dec 1934, *G.B. Hinton* 6746 (ISOTYPE). ASU 59077.

VERBENACEAE

Stachytarpheta hintonii H.N. Moldenke, *Phytologia* 1:431. 1940. Mexico. Mexico: 29 Aug 1935, *G.B. Hinton* 8236 (ISOTYPE). ASU 152532.

VIOLACEAE

Viola hemsleyana G. Calderon, *Phytologia* 52:101. 1982. Mexico. Mexico: 1 Jul 1979, *J. Rzedowski* 36144 (ISOTYPE). ASU 36144.

Viola litheon N.H. Holmgren & P.K. Holmgren, *Brittonia* 44:300. 1992. USA. Nevada: 3 Aug 1980, *N.H. Holmgren* 9727 with *P.K. Holmgren* (ISOTYPE). ASU 215440.

Viola oxydonta H.E. Ballard, *Phytologia* 74:359. 1993. Mexico. Mexico: 15 Jun 1934, *G.B. Hinton* 6167 (ISOTYPE). ASU 39975.

MAGNOLIOPHYTA-MONOCOTS**AGAVACEAE**

Agave arizonica H.S. Gentry & J. Weber, *Cact. Succ. J. (U.S.)* 42:223. 1970. USA. Arizona: 1 Jun 1968, *J. Weber s.n.* (ISOTYPE). ASU 129353.

Agave delamateri W.C. Hodgson & L. Slauson, *Hasseltonia* 3:133. 1995. USA. Arizona: 5 Jul 1989, *W.C. Hodgson* 5478 (ISOTYPE of 2 sheets). ASU 159840, 159849.

Agave deserti G. Engelmann ssp. **simplex** H.S. Gentry, *Occas. Pap. Calif. Acad. Sci.* 130:22. 1978. USA. Arizona: 12 Jun 1974, *H.S. Gentry* 23404 (ISOTYPE). ASU 76871.

Agave gigantensis H.S. Gentry, *Occas. Pap. Calif. Acad. Sci.* 130:63. 1978. Mexico. Baja California: 20 Jun 1973, *H.S. Gentry* 23320 with *L.A. McGill* (ISOTYPE). ASU 50795.

Agave impressa H.S. Gentry, *Agaves Cont. N. America*:146. 1982. Mexico. Sinaloa: 16 Feb 1974, *H.S. Gentry* 23366 (ISOTYPE). ASU 131488.

Agave jaiboli H.S. Gentry, *USDA Agric. Handbook* 399:89. 1972. Mexico. Sonora: 1 May 1965, *H.S. Gentry* 21177 (ISOTYPE). ASU 109644.

Agave montana J.A. Villarreal, *Sida* 17:191. 1996. Mexico. Nuevo Leon: 5 May 1995, *J.A. Villarreal et al.* 8120 (ISOTYPE). ASU 235856.

Agave moranii H.S. Gentry, *Occas. Pap. Calif. Acad. Sci.* 130:58. 1978. Mexico. Baja California: 13 Jun 1973, *H.S. Gentry* 23287 (ISOTYPE of 2 sheets). ASU 50796, 50797.

Agave oroensis H.S. Gentry, *Agaves Cont. N. America*:294. 1982. Mexico. Zacatecas: 1 Aug 1975, *H.S. Gentry* 23592 (ISOTYPE). ASU 128162.

Agave shrevei H.S. Gentry subsp. **magna** H.S. Gentry, *Agaves Cont. N. America* 4:451. 1982. Mexico. Chihuahua: 10 Oct 1973, *H.S. Gentry* 23360 with *R. Bye* (ISOTYPE of 2 sheets). ASU 131486, 131487.

Agave titanota H.S. Gentry, *Agaves Cont. N. America*:176. 1982. Mexico. Oaxaca: 25 Nov 1967, *H.S. Gentry* 22474 with *Tejeda* (ISOTYPE). ASU 153934.

Agave triangularis J.A. Jacobi, *Zweiter Nachtrag zu dem Versuch einer systematischen Ordnung der Agaveen*: 149. 1869. Neotyped by H.S. Gentry, *Agaves Cont. N. America*:180. 1982. Mexico. Puebla: 11 Mar 1974, *H.S. Gentry* 23399 (ISONEOTYPE). ASU 131533.

Yucca harrimaniae W. Trelease var. **sterilis** E. Neese & S.L. Welsh, *Great Basin Naturalist* 45:789. 1986. USA. Utah: 31 May 1979, *S.L. Welsh* 18461 (ISOTYPE). ASU 108176.

CYPERACEAE

Carex ciliaris M.L. Fernald, *Proc. Amer. Acad. Arts* 43:61. 1907. Mexico. Hidalgo: 26 Aug 1905, *C.G. Pringle* 10039 (ISOTYPE). ASU 1192.

Carex seatoniana L.H. Bailey, *Bot. Gaz.* 25:270. 1898. Mexico. Hidalgo: 24 Jun 1897, *C.G. Pringle* 7452 (ISOTYPE). ASU 1396.

FLAGELLARIACEAE

Joinvillea ascendens A.T. de Brongniart & J.A.A.

Gris subsp. **glabra** T.K. Newell, J. Arnold Arbor. 50:550. 1969. New Caledonia. Plateau de Dogny: 1 Oct 1966, T.K. Newell 196 (ISOTYPE, spirit). ASU 67966.

Joinvillea ascendens A.T.de Brongniart & J.A.A. Gris subsp. **samoensis** T.K. Newell, J. Arnold Arbor. 50:548. 1969. Western Samoa. Upolu: 26 Oct 1966, T.K. Newell 239 (ISOTYPE, spirit). ASU 67967.

IRIDACEAE

Nemastylis latifolia C.A. Weatherby, Proc. Amer. Acad. Arts 45:423. 1910. Mexico. Guerrero: 29 Jul 1907, C.G. Pringle 10391 (ISOTYPE). ASU 50592.

Tigridia morelosana B.L. Robinson, Proc. Amer. Acad. Arts 43:21. 1907. Mexico. Morelos: 5 Sep 1908, C.G. Pringle 13657 (ISOTYPE). ASU 50585.

LILIACEAE

Allium passeyi N.H. Holmgren & A.H. Holmgren, Brittonia 29:309. 1974. USA. Utah: 13 Jun 1960, N.H. Holmgren et al. 13125 (ISOTYPE). ASU 65093.

Maianthemum mexicanum A. Garcia-Arevalo, Acta Bot. Mex. 17:19. 1992. Mexico. Durango: 16 Jul 1991, A. Garcia & S. Acevedo 1008 (ISOTYPE). ASU 193190.

POACEAE

Bealia mexicana F.L. Scribner, In W.J. Beal, Grasses N. America 2:267. 1896. Lectotypified by P.M. Peterson in Madroño 36:262. 1989. Mexico. Chihuahua: 7 Oct 1886, C.G. Pringle 819 (ISOLECTOTYPE). ASU 3638.

Hordeum arizonicum G. Covas, Madroño 10:16. 1949. USA. Arizona: 3 Apr 1904, J.J. Thornber 536 (ISOTYPES). ASU 221231, 226002.

Muhlenbergia xerophila C.O. Goodding, J. Wash. Acad. Sci. 30:19. 1940. USA. Arizona: 22 Sep 1937, L.N. Goodding 262-M (ISOTYPE). ASU 208587.

ACKNOWLEDGMENTS

The authors thank Elinor Lehto, Thomas Daniel, and Charlotte M. Christy for initiating data entry, and Robin Schoeniger and Ed Gilbert for help with formatting of the data base. Raul Puente-Martinez helped with the Spanish translation. We also thank Michael Chamberland and one anonymous reviewer for helpful comments on the manuscript. We also want to thank the Department of Plant Biology, Arizona State University for financial support.

REFERENCES

ANONYMOUS. 1966. New herbarium abbreviations. Taxon 15:334.

ANONYMOUS. 1974. American Society of Plant Taxonomists, systematic resources in America, part 1, Survey and Preliminary Ranking.

DAVIS, H.B. 1936. Life and work of Cyrus Guernsey Pringle. Free Press Printing Co., Burlington, VT.

GREUTER, W., J. MCNEILL, F.R. BARRIE, H.M. BURDET, V. DEMOULIN, T.S. FILGUEIRAS, D.H. NICOLSON, P.C. SILVA, J.E. SKOG, P. TREHANE, N.J. TURLAND, and D.L. HAWSKWORTH (eds. and compilers). 2000. International code of botanical nomenclature (St. Louis Code). Adopted by the Sixteenth International Botanical Congress, St. Louis, July-August 1999. Regnum Veg. 138.

HOPKINS, E.J. and A. THOMAS, JR. 1960. The Arizona State University story. Southwest Publishing Co., Inc., Phoenix, AZ.

ICKERT-BOND, S.M. and D.J. PINKAVA. 2000. Vascular plant type specimens in the Arizona State University Herbarium. J. Arizona-Nevada Acad. Sci. 35 (Proc. Suppl.): 9 (Abstr.).

KEARNEY, T.H., R.H. PEEBLES, and COLLABORATORS. 1960. Arizona flora. University of California Press, Berkeley, Los Angeles.

MASON, C.T., L.R. LANDRUM, J.R. REEDER, D.J. PINKAVA, and R. VAN DEVENDER. 1992. A new flora of Arizona in preparation. *J. Arizona-Nevada Acad. Sci.* 26:1.

RUBINOFF, M.W. 1973. From normal school to university. Unpublished report, Arizona State University, Hayden Arizona Collection.

THOMAS, JR., A. 1960. Arizona State University: A documentary history of the first seventy-five years 1885-1960. Vol. I: The formative years 1885-1900. Vol. II: From normal school to teachers college 1900-1933. Vol. III: From teachers college to university 1933-1960. Vol. IV: Growth and development statistics and general information 1885-1960. Unpublished report, Arizona State University, Hayden Arizona Collection.

TRAUTH-NARE, A. and D.J. PINKAVA. 2000. Frederick Mortimer Irish: Founder of the ASU herbarium. *J. Arizona-Nevada Acad. Sci.* 35 (Proc. Suppl.): 9 (Abstr.).